



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/517,261

12/07/2004

Shinya Tabata

2004 1823A

8744

513 7590 05/08/2007
WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER

SAUNDERS JR, JOSEPH

ART UNIT

PAPER NUMBER

2615

MAIL DATE

DELIVERY MODE

05/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/517,261	Applicant(s) TABATA ET AL.	
	Examiner Joseph Saunders	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 32-46 and 48-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 32-46 and 48-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 8, 2007 has been entered. Claims 32 – 46 and 48 – 54 are currently pending and considered below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 53 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 53 states the limitation "wherein said diaphragm and said edge are unitarily formed" which contradicts a previous limitation of the claim which states "said edge is being a separate member relative to said diaphragm and bonded thereto". The examiner will interpret the claim as if the limitation "wherein said

Art Unit: 2615

diaphragm and said edge are unitarily formed" was deleted from the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 32, 40, 41, 53, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Espiritu (US 2004/0086143 A1), hereinafter Espiritu, in view of Ikeda et al. (WO 200054555 A1), hereinafter Ikeda, (English citations provided from corresponding document US 6,453,574 B1).

Claims 32, 40, 41, 53, and 54: Espiritu discloses a loudspeaker comprising: a magnetic circuit; a frame connected to said magnetic circuit; a voice coil within a magnetic gap of said magnetic circuit (not shown however is inherent for this type of speaker configuration in Figure 3); and a diaphragm having an outer peripheral portion bonded to said frame via an edge and also having an inner peripheral portion bonded to said voice coil, said edge being a separate member relative to said diaphragm and bonded thereto (Paragraphs 33 – 34 and Figure 3), and a thickness of a sectional shape of an

inner peripheral portion of said edge is thinner than a thickness of a sectional shape of an outer peripheral portion of said edge (Paragraph 47 and Figure 8).

Espiritu does not disclose wherein said edge is made of a foamed resin including both an independent foam and a continuous foam, wherein said edge includes a skin layer on said foamed resin, wherein an expansion ratio of said foamed resin differs between said inner peripheral portions of said edge and said outer peripheral portion of said edge, and wherein density of said inner peripheral portion of said edge is high than a density of said outer peripheral portion of said edge to suppress a decrease in a strength of said inner peripheral portion of said edge. Since Espiritu is concerned with the shape of the edge Espiritu does not disclose other important features, i.e. material properties, that must be taken into consideration when designing the edge of a speaker. Therefore, one of ordinary skill in the art at the time of the invention would be inclined to look elsewhere for teachings of a speaker edge with exemplary characteristics to use in the speaker of Espiritu.

Ikeda also discloses a speaker edge that is a separate member relative to said diaphragm and bonded thereto (Column 4 Lines 10 – 20). Ikeda further discloses that the edge is made of a foamed resin (Column 2 Lines 50 – 65) including both independent and continuous foam (“both closed and open cells,” Column 3 Lines 14 – 16) and “characterized in that the skin layer of the surface is formed integrally with an inside foamed layer without any clear boundary surface lying between them,” Column 3 Lines 17 – 23. “An expansion ratio of the foamed resin differs between said inner peripheral portion of said edge and said outer peripheral portion of said edge,” is a

Art Unit: 2615

limitation regarding the method of forming a speaker edge and is not relevant to the issue of patentability of the speaker itself. Therefore, this limitation is only given weight as to the final product which is a loudspeaker resulting in an edge wherein density of said inner peripheral portion of said edge at a thin portion is higher than a density of said outer peripheral portion of said edge at a thick portion to suppress a strength at said inner peripheral portion, also disclosed by Ikeda (thin portions have higher density than any other thick portions, so that the strength of the thin portions is enhanced, Column 3 Lines 24 – 26 and Column 6 Lines 53 – 55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu using the method of making a speaker edge disclosed by Ikeda since the edge of Ikeda has many advantages over conventional speaker edges including that due to the viscosity of the raw material composition the speaker edge and cone body are bonded with each other more firmly and that due to the composition of both closed cells and open cells the waterproofness of the speaker edge can be enhanced (Column 9 Line 25 – column 10 Line 39).

6. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Espiritu and Ikeda in view of Saiki et al. (5,371,805), hereinafter Saiki.

Claim 33: Espiritu and Ikeda disclose the loudspeaker according to claim 32, but *do not disclose* wherein said edge includes convexities and concavities alternately arranged in

a peripheral direction of said edge. Saiki discloses a loudspeaker of similar configuration where the edge is divided into alternately arranged convexly rolled and concavely rolled pieces (Column 4 Lines 1 – 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu and Ikeda incorporating the feature disclosed by Saiki since “secondary harmonic distortion of sound pressure characteristics, which is caused by the differences between quantities of air displaced by the edge member in the forward and rearward vibrations of the diaphragm, can be greatly reduced” (Column 2 Lines 39 – 44).

7. Claims 34, 39, 46, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable Espiritu and Ikeda in view of Koura et al. (PUB. NO. JP 05-122791 A), hereinafter Koura.

Claims 34 and 39: Espiritu and Ikeda disclose the loudspeaker according to claim 33, wherein the loudspeaker has a length and a width, with the length being greater than the width (Espiritu discloses that the loudspeaker could be for any shape speaker including oval or rectangular, Paragraph 41) but *do not disclose* a variation in thickness of said edge in a lengthwise direction of the loudspeaker is greater than a variation in thickness of said edge in a widthwise direction of the loudspeaker, and a thickness of said edge in a lengthwise direction of the loudspeaker is greater than a thickness of said edge in a widthwise direction of the loudspeaker. Koura discloses a loudspeaker

where the edge is divided into sections in the circumferential direction where the thickness of the material used for the edge changes or varies from section to section around the edge (Paragraphs 7 – 9 of Translation) therefore the thickness in one section would be greater than the thickness in another section. Also since the thickness of the edge is varied at different sections and the thickness may be greater in some sections than other sections along the edge, while at the same time the edge as disclosed by Espiritu and Ikeda is thicker at its outer peripheral than inner peripheral, the ratio from thick to thin in some sections may be greater than the ratio from thick to thin in other sections due to the improvement disclosed by Koura. It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu and Ikeda incorporating the feature disclosed by Koura in an oval or rectangular shaped loudspeaker since the edge sections of varying thickness may be spaced in any manner along the edge and would be well adapted to an oval or rectangular shape to allow for sufficient supporting of the diaphragm needed in the lengthwise direction provided by an edge that is “thick” while allowing for sufficient mobility of the diaphragm in the widthwise direction where the edge is shorter by providing an edge that is “thin” (Paragraph 11 of Translation).

Claim 46: Espiritu and Ikeda disclose the loudspeaker according to claim 32, wherein the loudspeaker has a length and a width, with the length being greater than the width (Espiritu discloses that the loudspeaker could be for any shape speaker including oval or rectangular, Paragraph 41) but *do not disclose* a thickness of said edge in a

lengthwise direction of the loudspeaker is greater than a thickness of said edge in a widthwise direction of the loudspeaker. Koura discloses a loudspeaker where the edge is divided into sections in the circumferential direction where the thickness of the material used for the edge changes or varies from section to section around the edge (Paragraphs 7 – 9 of Translation) therefore the thickness in one section would be greater than the thickness in another section. It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu and Ikeda incorporating the feature disclosed by Koura in an oval or rectangular shaped loudspeaker since the edge sections of varying thickness may be spaced in any manner along the edge and would be well adapted to an oval or rectangular shape to allow for sufficient supporting of the diaphragm needed in the lengthwise direction provided by an edge that is “thick” while allowing for sufficient mobility of the diaphragm in the widthwise direction where the edge is shorter by providing an edge that is “thin” (Paragraph 11 of Translation).

Claim 48: Espiritu discloses a loudspeaker comprising: a magnetic circuit; a frame connected to said magnetic circuit; a voice coil within a magnetic gap of said magnetic circuit (not shown however is inherent for this type of speaker configuration in Figure 3); and a diaphragm having an outer peripheral portion bonded to said frame via an edge and also having an inner peripheral portion bonded to said voice coil, said edge being a separate member relative to said diaphragm and bonded thereto (Paragraphs 33 – 34 and Figure 3), and wherein the loudspeaker has a length and a width, with the length

being greater than the width (Espiritu discloses that the loudspeaker could be for any shape speaker including oval or rectangular, Paragraph 41).

Espiritu does not disclose wherein said edge is made of a foamed resin including both an independent foam and a continuous foam, with a thickness of said edge in a lengthwise direction of the loudspeaker being greater than a thickness of said edge in a widthwise direction of the loudspeaker. Espiritu does disclose that the surround (edge) may be made of rubber, or compressed foam rubber (Paragraph 40) and applicant discloses in his specification that rubber is also a possible material for the edge. Since Espiritu is concerned with the shape of the edge Espiritu does not disclose other important features, i.e. material properties, that must be taken into consideration when designing the edge of a speaker. Therefore, one of ordinary skill in the art at the time of the invention would be inclined to look elsewhere for teachings of a speaker edge with exemplary characteristics to use in the speaker of Espiritu.

Ikeda also discloses a speaker edge that is a separate member relative to said diaphragm and bonded thereto (Column 4 Lines 10 – 20). Ikeda further discloses that the edge is made of a foamed resin (Column 2 Lines 50 – 65) including both independent and continuous foam (“both closed and open cells,” Column 3 Lines 14 – 16). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu using the method of making a speaker edge disclosed by Ikeda since the edge of Ikeda has many advantages over conventional speaker edges including that due to the viscosity of the raw material composition the speaker edge and cone body are bonded with each other

Art Unit: 2615

more firmly and that due to the composition of both closed cells and open cells the waterproofness of the speaker edge can be enhanced (Column 9 Line 25 – column 10 Line 39).

Koura further discloses a loudspeaker where the edge is divided into sections in the circumferential direction where the thickness of the material used for the edge changes or varies from section to section around the edge (Paragraphs 7 – 9 of Translation) therefore the thickness in one section would be greater than the thickness in another section. It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu and Ikeda incorporating the feature disclosed by Koura in an oval or rectangular shaped loudspeaker since the edge sections of varying thickness may be spaced in any manner along the edge and would be well adapted to an oval or rectangular shape to allow for sufficient supporting of the diaphragm needed in the lengthwise direction provided by an edge that is “thick” while allowing for sufficient mobility of the diaphragm in the widthwise direction where the edge is shorter by providing an edge that is “thin” (Paragraph 11 of Translation).

8. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Espiritu, Ikeda, and Koura in view of Sumiyama (PUB. NO. JP 06-125594 A), hereinafter Sumiyama.

Art Unit: 2615

Claim 35: Espiritu, Ikeda, and Koura disclose the loudspeaker according to claim 34, but *do not disclose* wherein a dimension of said inner peripheral portion of said edge is smaller than a corresponding dimension of said outer peripheral portion said diaphragm. Sumiyama discloses a loudspeaker of similar configuration where the outer diameter of the diaphragm is larger than the clamp section of the edge (Drawing 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu, Ikeda, and Koura incorporating the feature disclosed by Sumiyama since it allows for the diameter to be enlarged which increases low frequency reproduction while maintaining a small enclosure size (Paragraph 2 of Translation).

9. Claims 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Espiritu, Ikeda, and Koura in view of Czerwinski (US 2003/0068064 A1), hereinafter Czerwinski.

Claim 36: Espiritu, Ikeda, and Koura disclose the loudspeaker according to claim 34, but *do not disclose* wherein said edge is corrugated in a direction from said inner peripheral portion of said edge to said outer peripheral portion of said edge. Czerwinski discloses a loudspeaker of similar configuration where the cross section of the surround (edge) includes corrugations in the radial direction (Figure 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu, Ikeda, and Koura incorporating the feature

disclosed by Czerwinski since it allows for the diaphragm to be centered while providing a restoring force to keep the voice coil positioned within the magnetic gap (Paragraph 43).

Claim 38: Espiritu, Ikeda, and Koura disclose the loudspeaker according to claim 34, but *do not disclose* wherein said edge includes ribs in a peripheral direction of said edge. Czerwinski discloses a loudspeaker of similar configuration where the surround (edge) includes a relatively less-compressed area in the circumferential direction of the edge (Paragraph 41 and Figure 1 Item 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu, Ikeda, and Koura incorporating the feature disclosed by Czerwinski since it allows for "increased flexibility in a direction which is orthogonal to the diaphragm without losing any rigidity in any direction within the plane of the diaphragm" (Paragraph 44).

10. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Espiritu, Ikeda, and Koura in view of Irby et al. (US 6,611,604 B1), hereinafter Irby.

Claim 37: Espiritu, Ikeda, and Koura disclose the loudspeaker according to claim 34, but *do not disclose* wherein said edge includes ribs in a direction from said inner peripheral portion of said edge to said outer peripheral portion of said edge. Irby discloses a loudspeaker of similar configuration where the surround (edge) has radially

Art Unit: 2615

position ribs (Item 34). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu, Ikeda, and Koura incorporating the feature disclosed by Irby since the ribs allow for better performance in the form of less distortion due to an increased rigidity of the surround (Column 2 Lines 55 – 64).

11. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Espiritu and Ikeda in view of Sumiyama.

Claim 42: Espiritu and Ikeda discloses the loudspeaker according to claim 32, but *do not disclose* wherein a dimension of said inner peripheral portion of said edge is smaller than a corresponding dimension of said outer peripheral portion of said diaphragm. Sumiyama discloses a loudspeaker of similar configuration where the outer diameter of the diaphragm is larger than the clamp section of the edge (Drawing 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu and Ikeda incorporating the feature disclosed by Sumiyama since it allows for the diameter to be enlarged which increases low frequency reproduction while maintaining a small enclosure size (Paragraph 2 of Translation).

12. Claims 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Espiritu and Ikeda in view of Czerwinski.

Claim 43: Espiritu and Ikeda discloses the loudspeaker according to claim 32, but *do not disclose* wherein said edge is corrugated in a direction from said inner peripheral portion of said edge to said outer peripheral portion of said edge. Czerwinski discloses a loudspeaker of similar configuration where the cross section of the surround (edge) includes corrugations in the radial direction (Figure 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu and Ikeda incorporating the feature disclosed by Czerwinski since it allows for the diaphragm to be centered while providing a restoring force to keep the voice coil positioned within the magnetic gap (Paragraph 43).

Claim 45: Espiritu and Ikeda discloses the loudspeaker according to claim 32, but *do not disclose* wherein said edge includes ribs in a peripheral direction of said edge. Czerwinski discloses a loudspeaker of similar configuration where the surround (edge) includes a relatively less-compressed area in the circumferential direction of the edge (Paragraph 41 and Figure 1 Item 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu and Ikeda incorporating the feature disclosed by Czerwinski since it allows for "increased flexibility in a direction which is orthogonal to the diaphragm without losing any rigidity in any direction within the plane of the diaphragm" (Paragraph 44).

13. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Espiritu and Ikeda in view of Irby.

Claim 44: Espiritu and Ikeda discloses the loudspeaker according to claim 32, but *do not disclose* wherein said edge includes ribs in a direction from said inner peripheral portion of said edge to said outer peripheral portion of said edge. Irby discloses a loudspeaker of similar configuration where the surround (edge) has radially position ribs (Item 34). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Espiritu and Ikeda incorporating the feature disclosed by Irby since the ribs allow for better performance in the form of less distortion due to an increased rigidity of the surround (Column 2 Lines 55 – 64).

14. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saiki in view of Ikeda.

Claim 49: Saiki discloses a loudspeaker comprising: a magnetic circuit; a frame connected to said magnetic circuit; a voice coil within a magnetic gap of said magnetic circuit; and a diaphragm having an outer peripheral portion bonded to said frame via an edge, and also having an inner peripheral portion bonded to said voice coil, said edge being a separate member relative to said diaphragm and bonded thereto, wherein said

edge is divided into a plurality of sections in a circumferential direction with convex portions and concave portions alternately arranged (Column 4 Lines 1 – 6).

Saiki *does not disclose* wherein said edge is made of foamed resin including both an independent foam and a continuous foam. Since Saiki is concerned with the shape of the edge Saiki does not disclose other important features, i.e. material properties, that must be taken into consideration when designing the edge of a speaker. Therefore, one of ordinary skill in the art at the time of the invention would be inclined to look elsewhere for teachings of a speaker edge with exemplary characteristics to use in the speaker of Saiki.

Ikeda also discloses a speaker edge that is a separate member relative to said diaphragm and bonded thereto (Column 4 Lines 10 – 20). Ikeda further discloses that the edge is made of a foamed resin (Column 2 Lines 50 – 65) including both independent and continuous foam (“both closed and open cells,” Column 3 Lines 14 – 16). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Saiki using the method of making a speaker edge disclosed by Ikeda since the edge of Ikeda has many advantages over conventional speaker edges including that due to the viscosity of the raw material composition the speaker edge and cone body are bonded with each other more firmly and that due to the composition of both closed cells and open cells the waterproofness of the speaker edge can be enhanced (Column 9 Line 25 – column 10 Line 39).

15. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiyama in view of Ikeda.

Claim 50: Sumiyama discloses a loudspeaker comprising: a magnetic circuit; a frame connected to said magnetic circuit; a voice coil within a magnetic gap of said magnetic circuit; and a diaphragm having an outer peripheral portion bonded to said frame via an edge, and also having an inner peripheral portion bonded to said voice coil, said edge being a separate member relative to said diaphragm and bonded thereto (Paragraph 3 of Translation), wherein a dimension of an inner peripheral of said edge being smaller than a corresponding dimension of said outer peripheral portion of said diaphragm (Paragraph 2 of Translation and Drawing 3).

Sumiyama *does not disclose* wherein said edge is made of foamed resin including both an independent foam and a continuous foam. Since Sumiyama is concerned with the shape of the edge Saiki does not disclose other important features, i.e. material properties, that must be taken into consideration when designing the edge of a speaker. Therefore, one of ordinary skill in the art at the time of the invention would be inclined to look elsewhere for teachings of a speaker edge with exemplary characteristics to use in the speaker of Sumiyama.

Ikeda also discloses a speaker edge that is a separate member relative to said diaphragm and bonded thereto (Column 4 Lines 10 – 20). Ikeda further discloses that the edge is made of a foamed resin (Column 2 Lines 50 – 65) including both independent and continuous foam ("both closed and open cells," Column 3 Lines 14 –

16). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Sumiyama using the method of making a speaker edge disclosed by Ikeda since the edge of Ikeda has many advantages over conventional speaker edges including that due to the viscosity of the raw material composition the speaker edge and cone body are bonded with each other more firmly and that due to the composition of both closed cells and open cells the waterproofness of the speaker edge can be enhanced (Column 9 Line 25 – column 10 Line 39).

16. Claims 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Czerwinski in view of Ikeda.

Claim 51: Czerwinski discloses a loudspeaker comprising: a magnetic circuit; a frame connected to said magnetic circuit; a voice coil within a magnetic gap of said magnetic circuit; and a diaphragm having an outer peripheral portion bonded to said frame via an edge, and also having an inner peripheral portion bonded to said voice coil, said edge being a separate member relative to said diaphragm and bonded thereto (Paragraphs 39 and 40), with said edge being corrugated in a direction from an inner peripheral portion of said edge to an outer peripheral portion of said edge (Paragraph 43 and Figure 4).

Czerwinski does not disclose wherein said edge is made of foamed resin including both an independent foam and a continuous foam. Since Czerwinski is

concerned with the shape of the edge Czerwinski does not disclose other important features, i.e. material properties, that must be taken into consideration when designing the edge of a speaker. Therefore, one of ordinary skill in the art at the time of the invention would be inclined to look elsewhere for teachings of a speaker edge with exemplary characteristics to use in the speaker of Czerwinski.

Ikeda also discloses a speaker edge that is a separate member relative to said diaphragm and bonded thereto (Column 4 Lines 10 – 20). Ikeda further discloses that the edge is made of a foamed resin (Column 2 Lines 50 – 65) including both independent and continuous foam (“both closed and open cells,” Column 3 Lines 14 – 16). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Czerwinski using the method of making a speaker edge disclosed by Ikeda since the edge of Ikeda has many advantages over conventional speaker edges including that due to the viscosity of the raw material composition the speaker edge and cone body are bonded with each other more firmly and that due to the composition of both closed cells and open cells the waterproofness of the speaker edge can be enhanced (Column 9 Line 25 – column 10 Line 39).

Claim 52: Czerwinski discloses a loudspeaker comprising a magnetic circuit; a frame connected to said magnetic circuit; a voice coil within a magnetic gap of said magnetic circuit; and a diaphragm having an outer peripheral portion bonded to said frame via an edge, and also having an inner peripheral portion bonded to said voice coil, said edge

being a separate member relative to said diaphragm and bonded thereto (Paragraphs 39 and 40), and said edge includes ribs in a direction from an inner peripheral portion of said edge to an outer peripheral portion of said edge (Paragraph 41 and Figure 1 Item 30).

Czerwinski *does not disclose* wherein said edge is made of foamed resin including both an independent foam and a continuous foam. Since Czerwinski is concerned with the shape of the edge Czerwinski does not disclose other important features, i.e. material properties, that must be taken into consideration when designing the edge of a speaker. Therefore, one of ordinary skill in the art at the time of the invention would be inclined to look elsewhere for teachings of a speaker edge with exemplary characteristics to use in the speaker of Czerwinski.

Ikeda also discloses a speaker edge that is a separate member relative to said diaphragm and bonded thereto (Column 4 Lines 10 – 20). Ikeda further discloses that the edge is made of a foamed resin (Column 2 Lines 50 – 65) including both independent and continuous foam ("both closed and open cells," Column 3 Lines 14 – 16). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct the loudspeaker edge disclosed by Czerwinski using the method of making a speaker edge disclosed by Ikeda since the edge of Ikeda has many advantages over conventional speaker edges including that due to the viscosity of the raw material composition the speaker edge and cone body are bonded with each other more firmly and that due to the composition of both closed cells and open cells the

Art Unit: 2615

waterproofness of the speaker edge can be enhanced (Column 9 Line 25 – column 10 Line 39).

Response to Arguments

17. Applicant's arguments with respect to claims 32 – 46 and 48 – 54 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Saunders whose telephone number is (571) 270-1063. The examiner can normally be reached on Monday - Thursday, 9:00 a.m. - 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2615

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JS
May 2, 2007



SINH TRAN
SUPERVISORY PATENT EXAMINER